

The massage system 3 and its drum 4 are seen in fig. 1. One or more frozen blocks of meat 1 having a temperature T_1 are placed in the drum 4 of the massage system 3, and the drum 4 is closed and then appears as pressure-proof in the following processes. Each of the blocks of meat 1 consists of several units of meat 2, see fig. 2, where a unit of meat 2 preferably has a weight below 1 kg, and a block of meat 1 may have a weight of more than 20 kg. A liquid 6 having a temperature T_2 is supplied to the interior of the carriers 5. The liquid 6 is preferably water, but may also be an oil product, and the supply takes place from and to a heat reservoir. The heat reservoir, the interior of the carriers 5 and the supply means, e.g. pipes, together constitute a closed system, which also comprises a device for recirculating the liquid 6, said liquid being preferably thermostat-controlled. T_2 is higher than T_1 and is preferably in the range 10 – 40 °C. The supply of liquid 6 to the interior of the carriers 5 causes the surface of the carriers 5 to have a temperature T_3 which is typically equal to T_2 or 1 – 2 °C lower than T_2 . T_3 , like T_2 , is higher than T_1 .

A brine is supplied to the interior of the drum 4, consisting preferably of water with dissolved salts, e.g. containing phosphate ions, PO_4^{3-} and/or chloride ions, Cl^- having a temperature T_4 which is preferably 2 – 4 °C higher than T_1 . The brine may be supplied under vacuum, which reduces the boiling point of water relative to the boiling point of water at the prevailing atmospheric pressure. The brine serves as an effective medium for transferring heat between the sides of the drum 4 and the block of meat 1. The added ions increase the ion activity in the liquid 6, which perhaps gives an additional heat conduction ability. The brine is also instrumental in the process of massaging the meat.

Rotation of the drum 4 with the contents of blocks of meat 1, units of meat 2 and brine causes heat exchange between the sides of the drum 4 and the brine, and from the sides of the drum 4 to blocks of meat 1 and units of

meat 2 as well as between blocks of meat 1, units of meat 2 and the brine. After a while, the block of meat 1 begins to break up into its units of meat 2, since the block of meat 1 as a whole thaws, and since the rotation causes a mechanical impact between preferably the carriers 5 and the block of meat 1. New units of meat 2 will thus continuously form part of the surface of the block of meat 1, and since the surface has the greatest heat exchange effect with the walls of the drum and the brine, the units of meat are preferably loosened in the surface of the block. During this continuous thawing process the drum is preferably subjected to a negative pressure of typically 0.1 – 0.95 bar. The negative pressure causes the boiling point of water to be reduced relative to the situation at a prevailing atmospheric pressure, and reduces the period of thawing. The negative pressure, combined with the temperatures prevailing in the drum 4, also characterizes an environment in which isolated units of meat 2 in the drum do not begin to deteriorate, during the period of time between loosening from the block of meat until the thawing of remaining blocks of meat 1 has been completed.

The thawing process changes at a time from being thawing of a block of meat 1 consisting of units of meat 2 to being preferably thawing of the individual units of meat 2. The drum 4 continues its rotation during the thawing of the individual units of meat 2.

The carriers 5 may be constructed asymmetrically, see e.g. fig. 4, where a first side 7 of the carrier 5 having a soft carrier surface has another profile than a second side 8 of the carrier 5 having a hard carrier face. The mechanical impact between the carriers 5 and the blocks of meat 1 and units of meat 2, if any, is different according to whether it is the first side 7 or the second side 8 of the carrier 5 which is preferably in contact with units of meat 2 or blocks of meat 1. In the example of the carrier 5 shown in fig. 4 a rotation, which preferably causes the first side 7 to contact units of meat 2 or blocks of meat 1, will give rise to a softer massage than a rotation in the

opposite direction. A change in the direction of rotation preferably takes place in connection with a targeted massage of the individual units of meat, but it is possible to change the rotation of the drum 4 at any time during the process.

CLAIMS

1. A method of thawing one or more frozen blocks of meat (1) having a temperature T_1 , said blocks of meat (1) being composed of units of meat (2) frozen together, characterized in that the frozen blocks of meat (1) are placed in a drum (4) of a massage system (3), said drum (4) comprising carriers (5),
- that liquid (6) having a temperature T_2 is supplied in the interior of the carriers (5), said temperature being higher than T_1 , said supply generating a temperature T_3 on the surface of the carriers (5), said temperature T_3 being higher than T_1 , and
- that brine having a temperature T_4 is supplied to the drum (4), said temperature T_4 being higher than T_1 .
2. A method according to claim 1, characterized in that the brine is supplied to the drum (4) under establishment of a vacuum.
3. A method according to claim 1 or 2, characterized in that the drum (4) rotates/revolves, said movement causing the blocks of meat (1) and the brine to get into physical contact with the heated carriers (5).
4. A method according to any one of the preceding claims, characterized in that the drum (4) rotates/revolves, said movement establishing a supply of heat to the frozen blocks of meat (1) and to the brine, and causing the individual frozen blocks of meat (1) to be broken up into several and separate units of meat (2).
5. A method according to any one of the preceding claims, characterized in that the difference between T_1 and T_4 is $2 - 4^\circ\text{C}$.